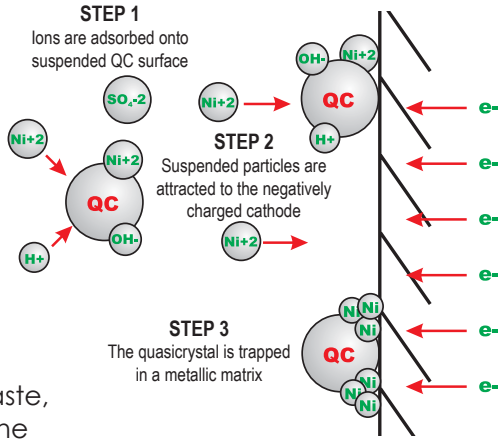
Durable Non-Stick Coating

Quasicrystalline coatings are nonstick coatings that perform like Teflon® but are hard like steel and will not scratch or peel over time. The end result is a non-stick pan that lasts longer and decreases life-cycle cost.



Why is it Needed?

Washing pots and pans in the field uses approximately 250 gallons of hot water per day, which must be treated or back hauled for disposal. The amount of water actually needed to clean cookware is dependant on how much food is stuck to the cookware. Adding a coating to the cookware will make it much easier to remove the food waste, thereby reducing the amount of water needed to clean the cookware. Commercially available nonstick coatings made from Teflon®-type materials are soft, scratch and wear-off over time. The quasicrystalline coating will not wear or scratch and will be resistant to corrosion and pitting.

Technology:

To develop a durable nonstick coating, engineers have turned to quasicrystals. Quasicrystals are special metal alloys that have unique properties; they can be as hard as steel yet exhibit non-stick properties similar to Teflon®. The aluminum rich quasicrystal $Al_{65}Cu_{23}Fe_{12}$ is electroplated with nickel on the pan's surface using standard electroplating equipment. The surface is then polished and roughened.

Key Features / Benefits:

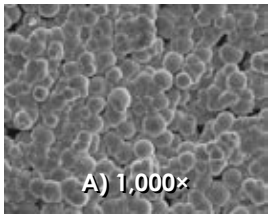
Reduced Labor for Cleaning…The slippery non-stick surface will make the job of washing pots and pans easier and less labor intensive.

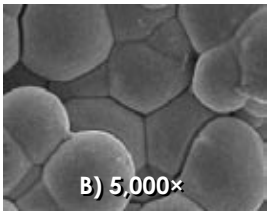
Less Water Consumption…Less food waste on the pans means less water has to be used to clean the post and pans. Clean water is a precious commodity in the field.

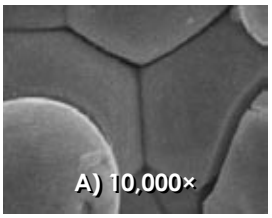
Less Greywater Production…Sanitation operations convert 250 gallons of fresh water to greywater every day. Reducing consumption will also reduce the amount of water that is disposed of.

Decreases Life-Cycle Cost…Aluminum cookware corrodes and becomes pitted with time, coated pans will last longer.

Increased Food Safety…Coated pans will not corrode or pit making them less likely to harbor food borne pathogens.







Typical quasicrystal structure as seen with a Scanning Electron Microscope.

Pin on Disk wear results. A) Uncoated Al-3004 sample tested for 10 min. and B) electrocodeposited quasicrystalline coated sample tested for 120 min.

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